(Model.)

4 Sheets—Sheet 1.

L. M. SENÉCAL.

NAIL PLATE FEEDER.

No. 261,878. Patented Aug. 1, 1882.

Fig. 1

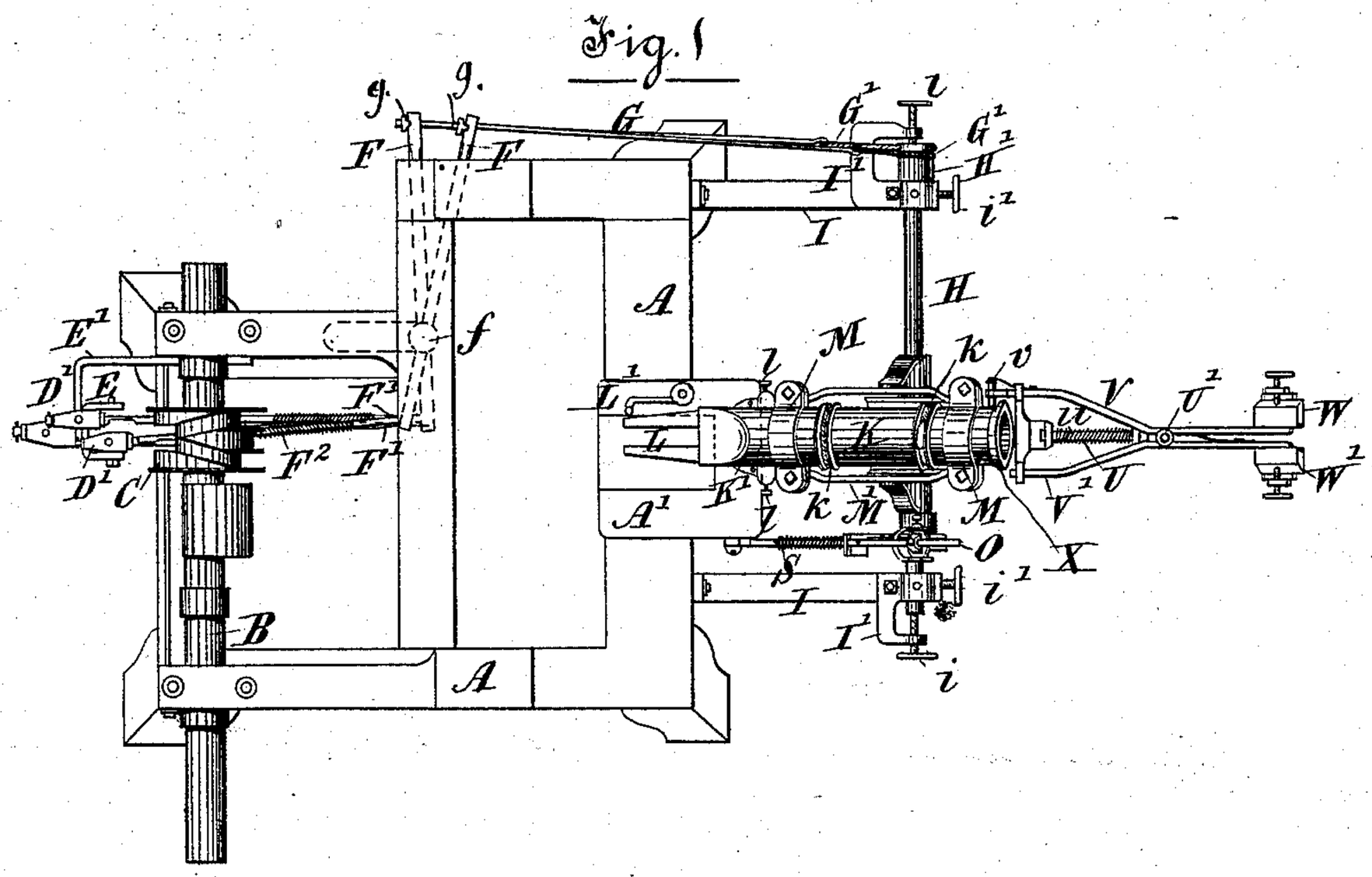
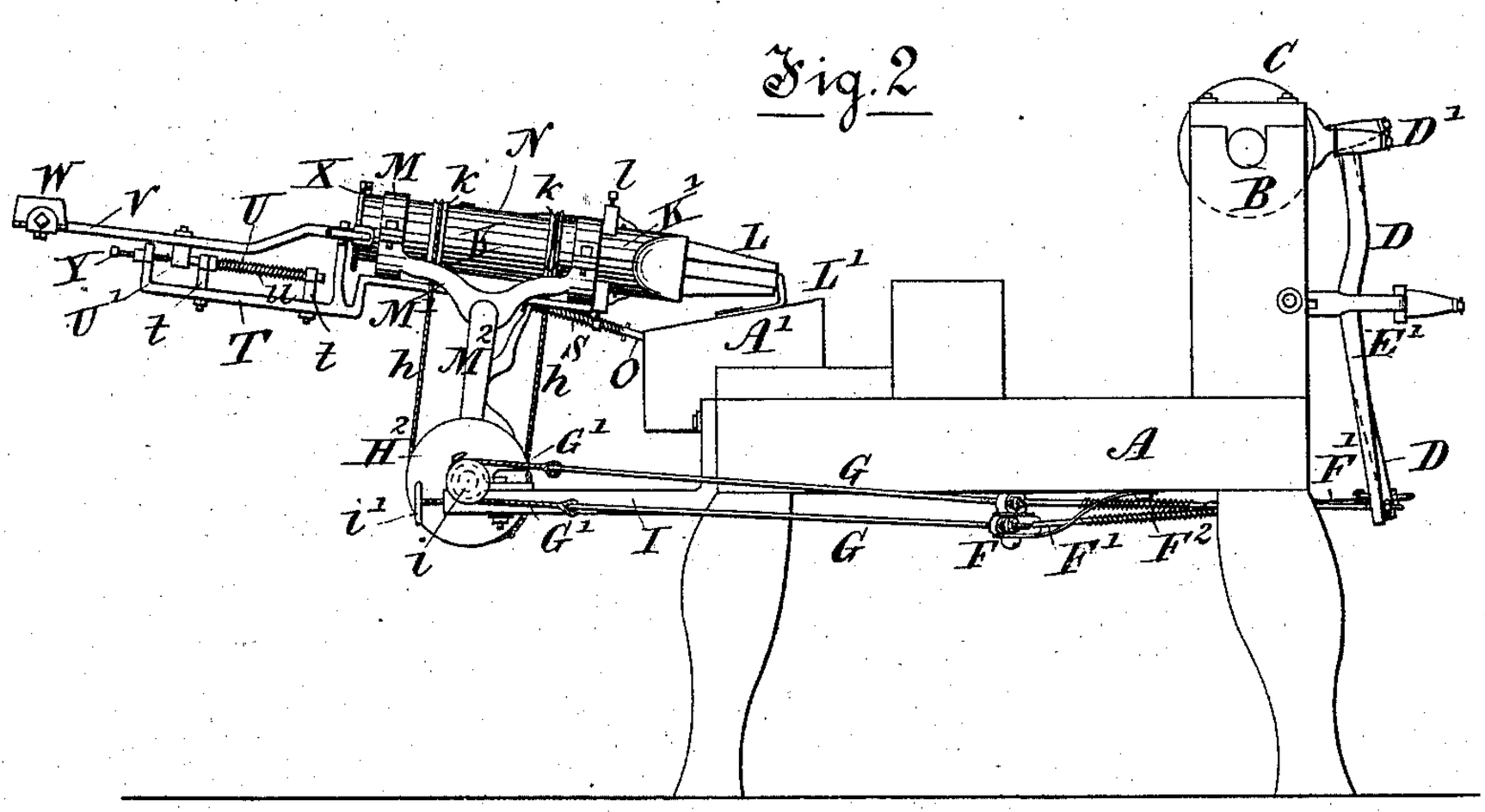


Fig. 2



Witnesses:

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Wm. Johnston.

Louis Misael Senécal
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Per Atty:

David Reynolds

(Model.)

4 Sheets—Sheet 2.

L. M. SENÉCAL.

NAIL PLATE FEEDER.

No. 261,878. Patented Aug. 1, 1882.

Fig. 3

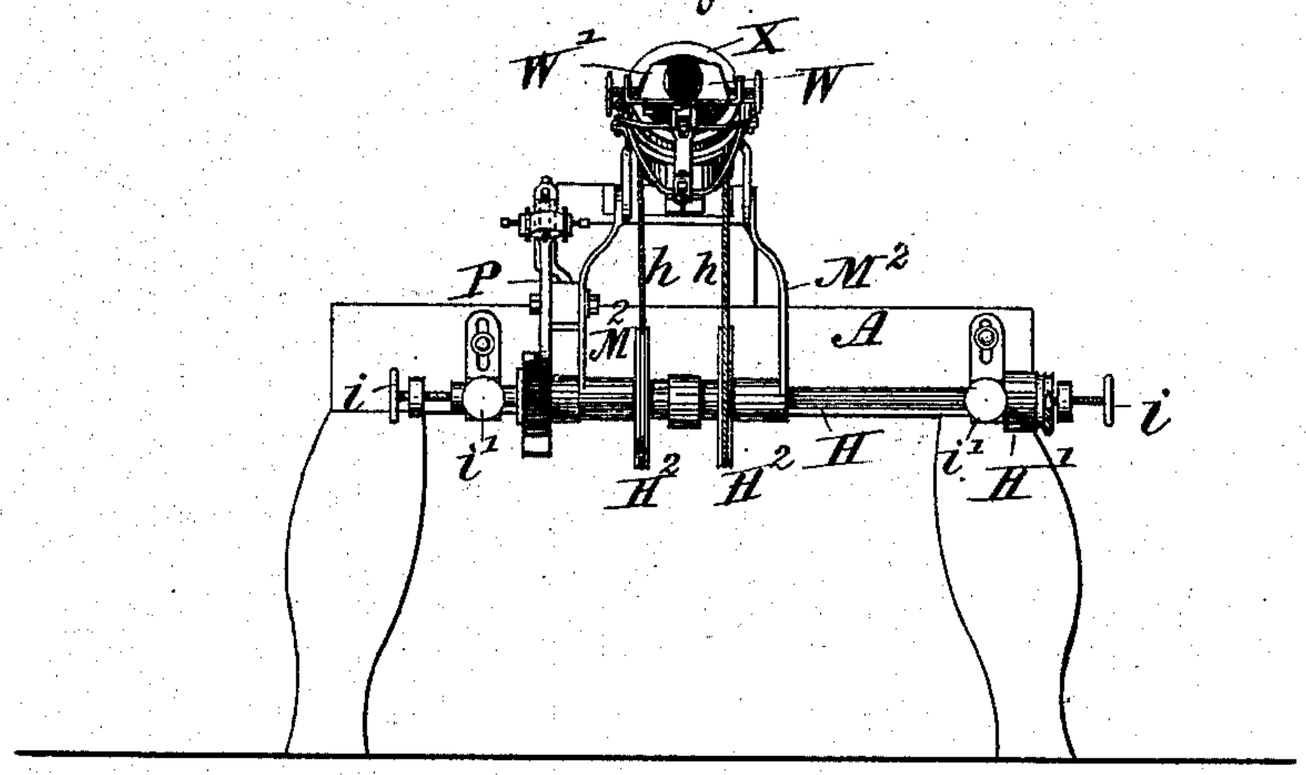
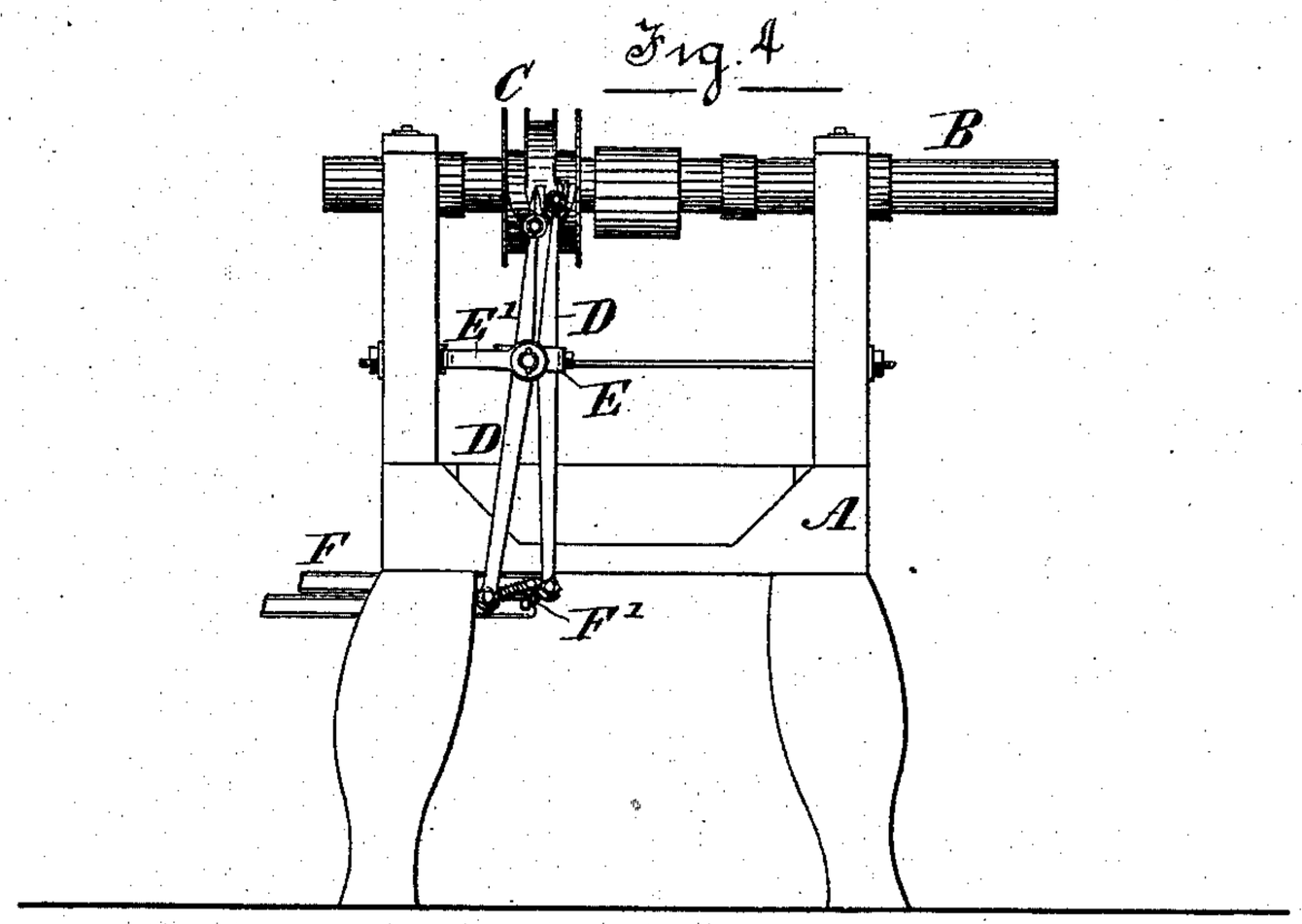


Fig. 4



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(Model.)

4 Sheets—Sheet 3

L. M. SENÉCAL.

NAIL PLATE FEEDER.

No. 261,878. Patented Aug. 1, 1882.

Fig. 5

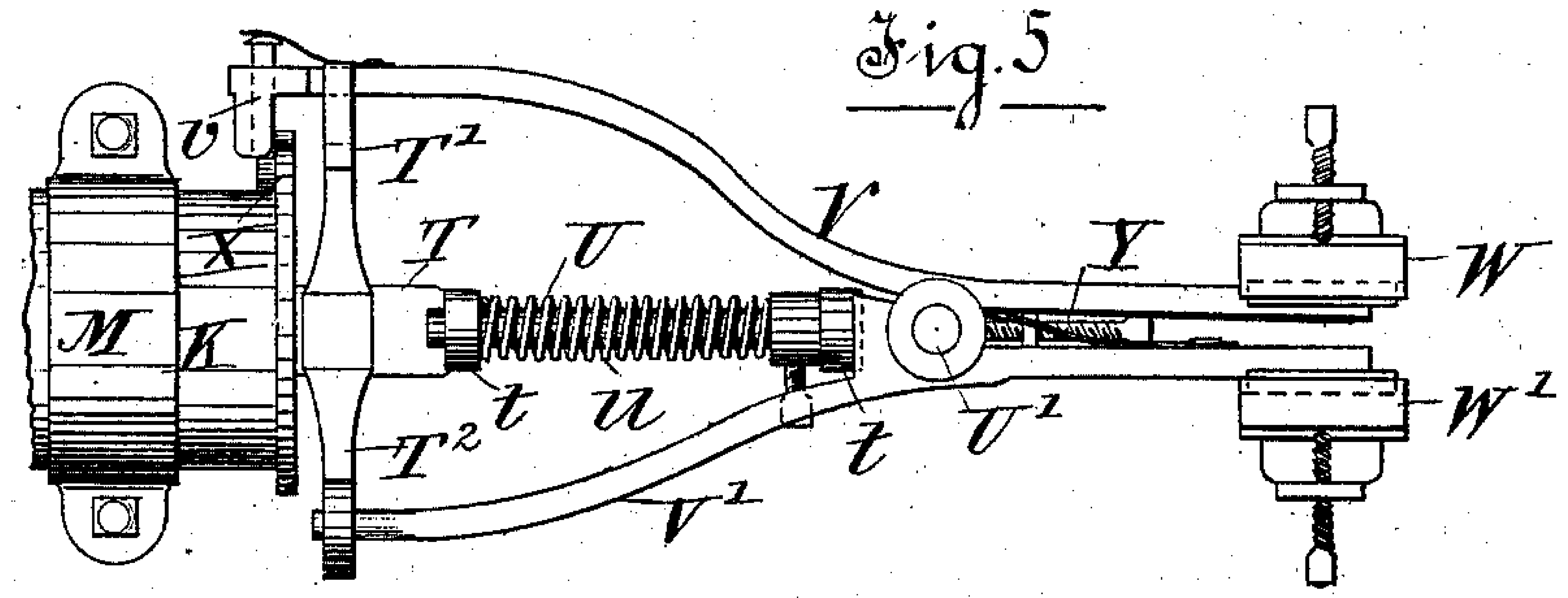


Fig. 6

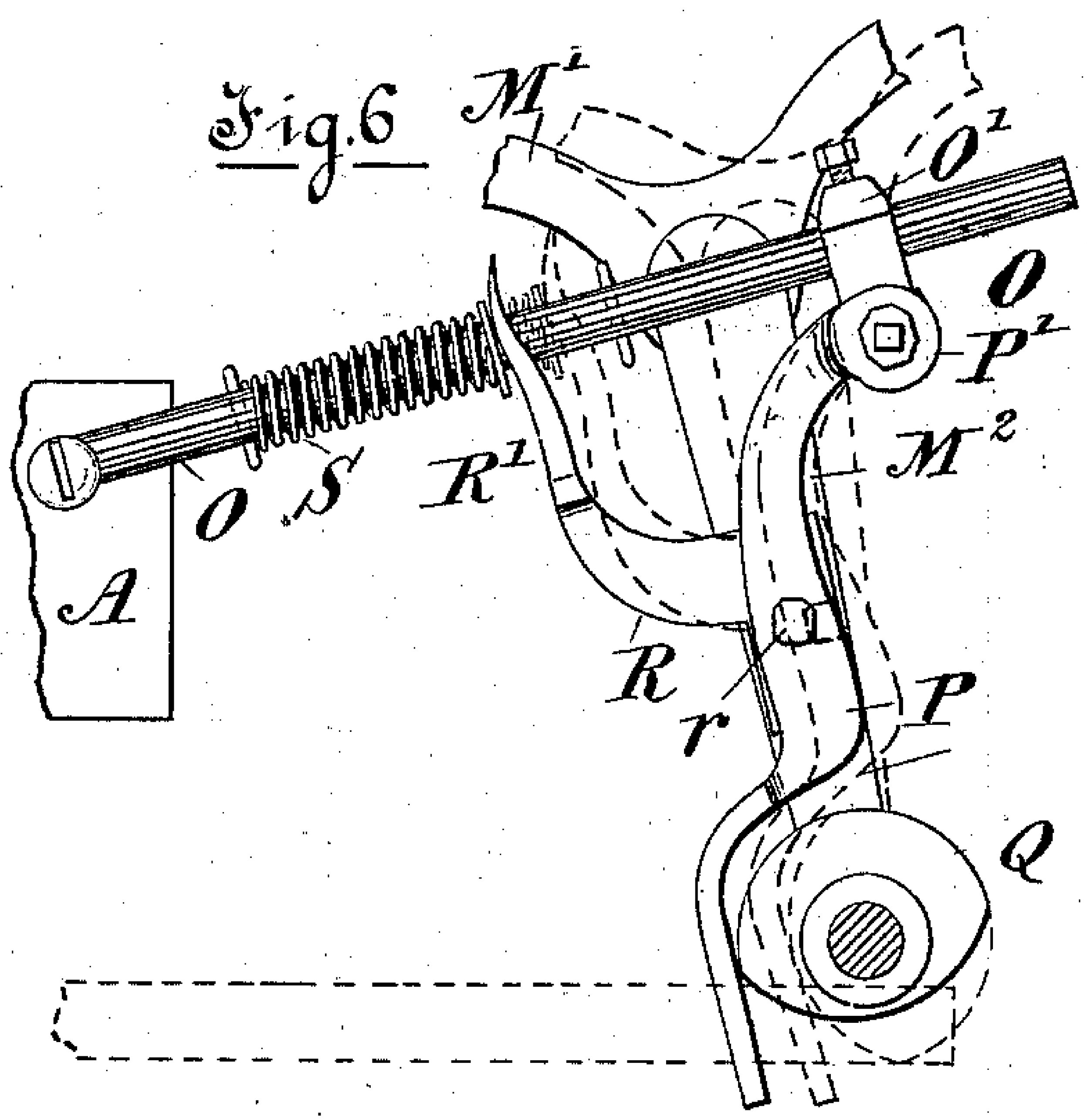


Fig. 7

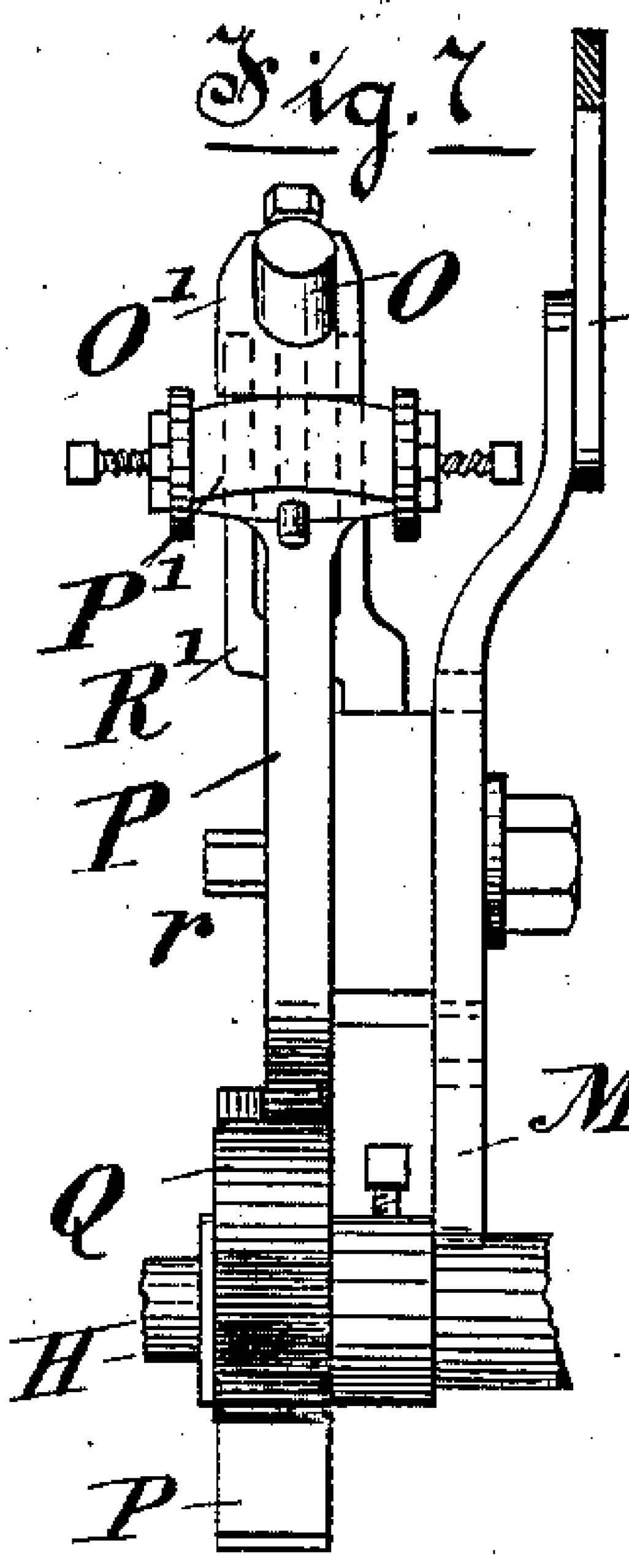


Fig. 8

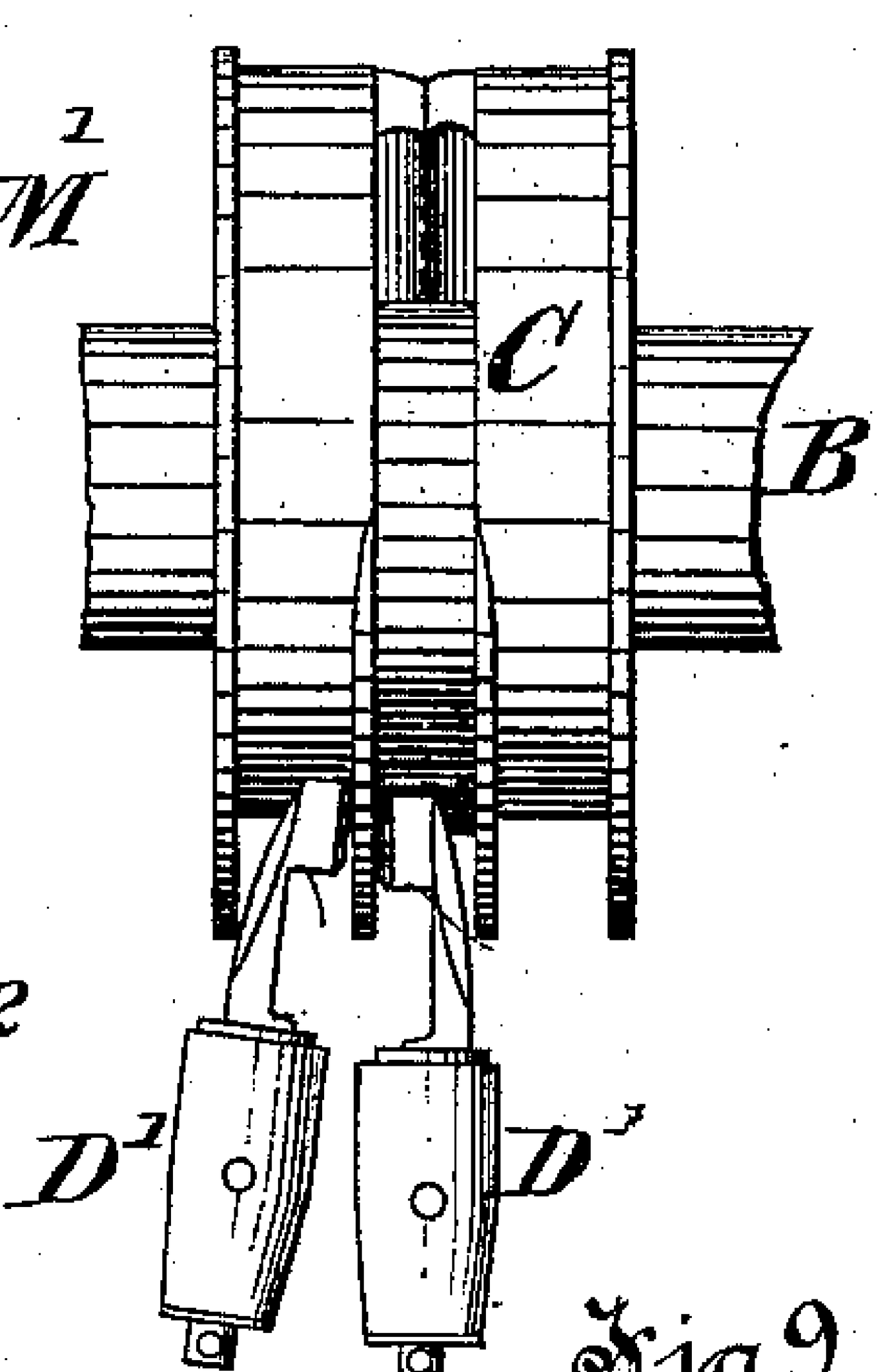


Fig. 9

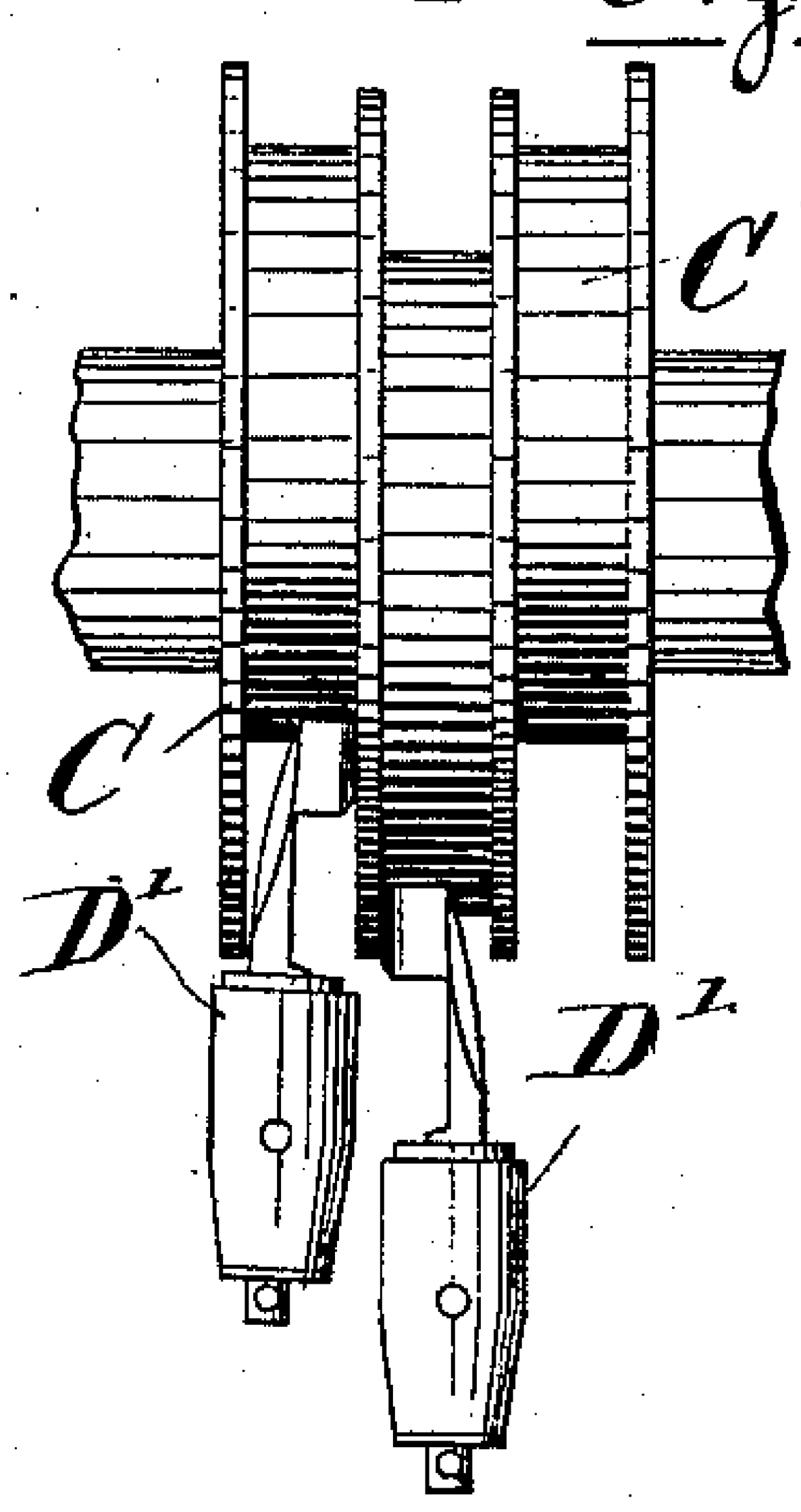


Fig. 10

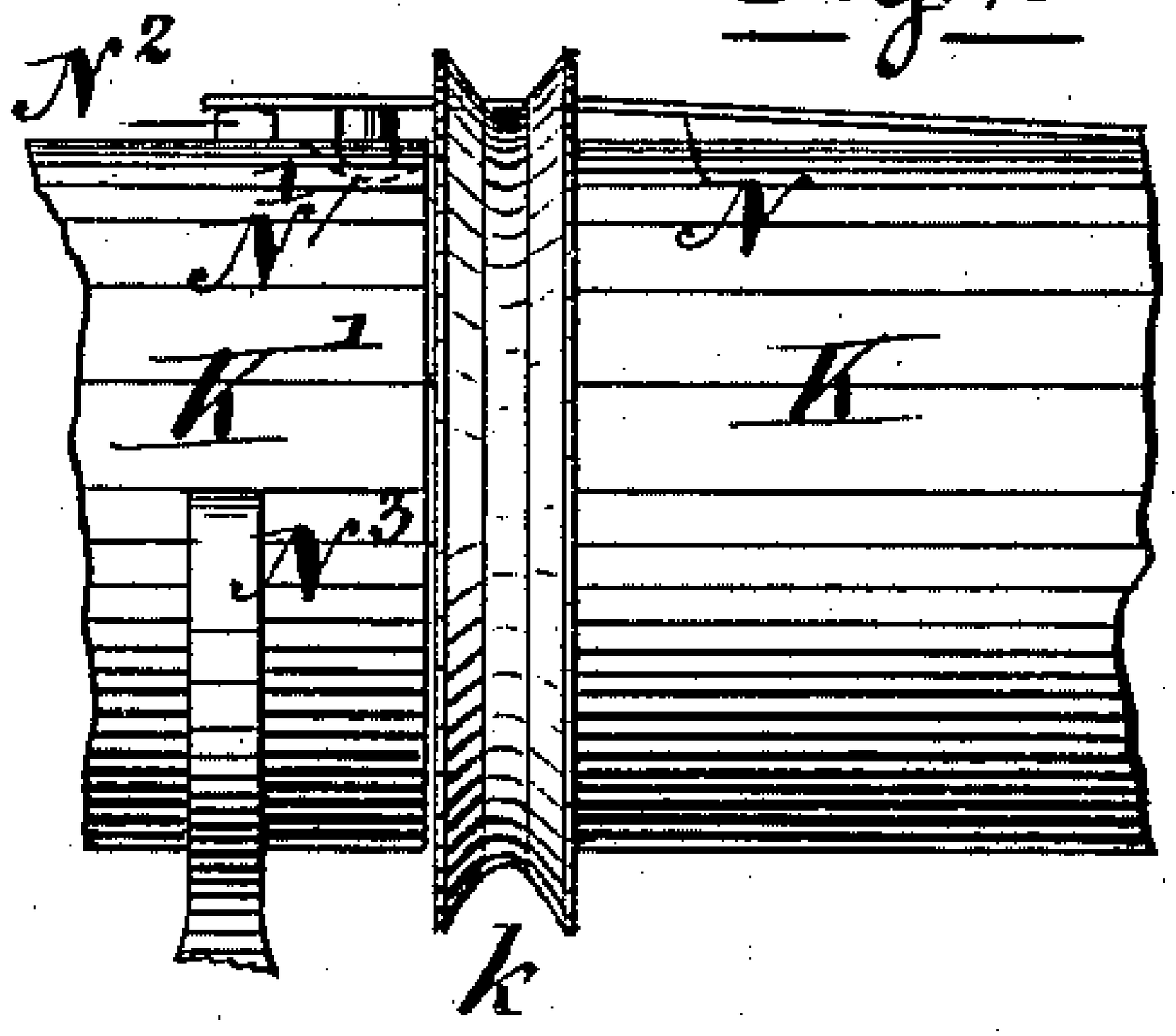
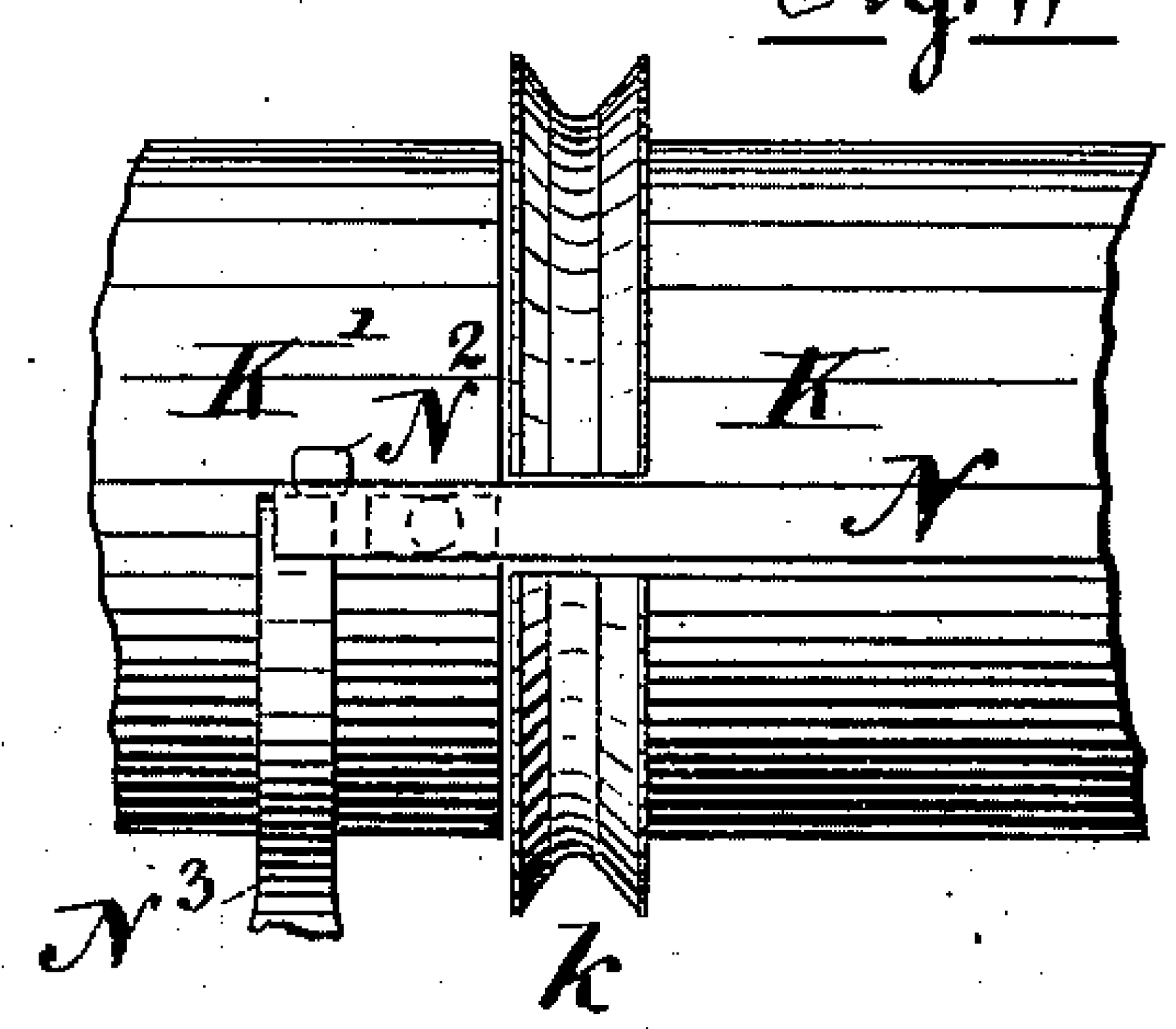


Fig. 11



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Per Atty:

Foster [illegible]

N. PETERS. Photo-Lithographer, Washington, D. C.

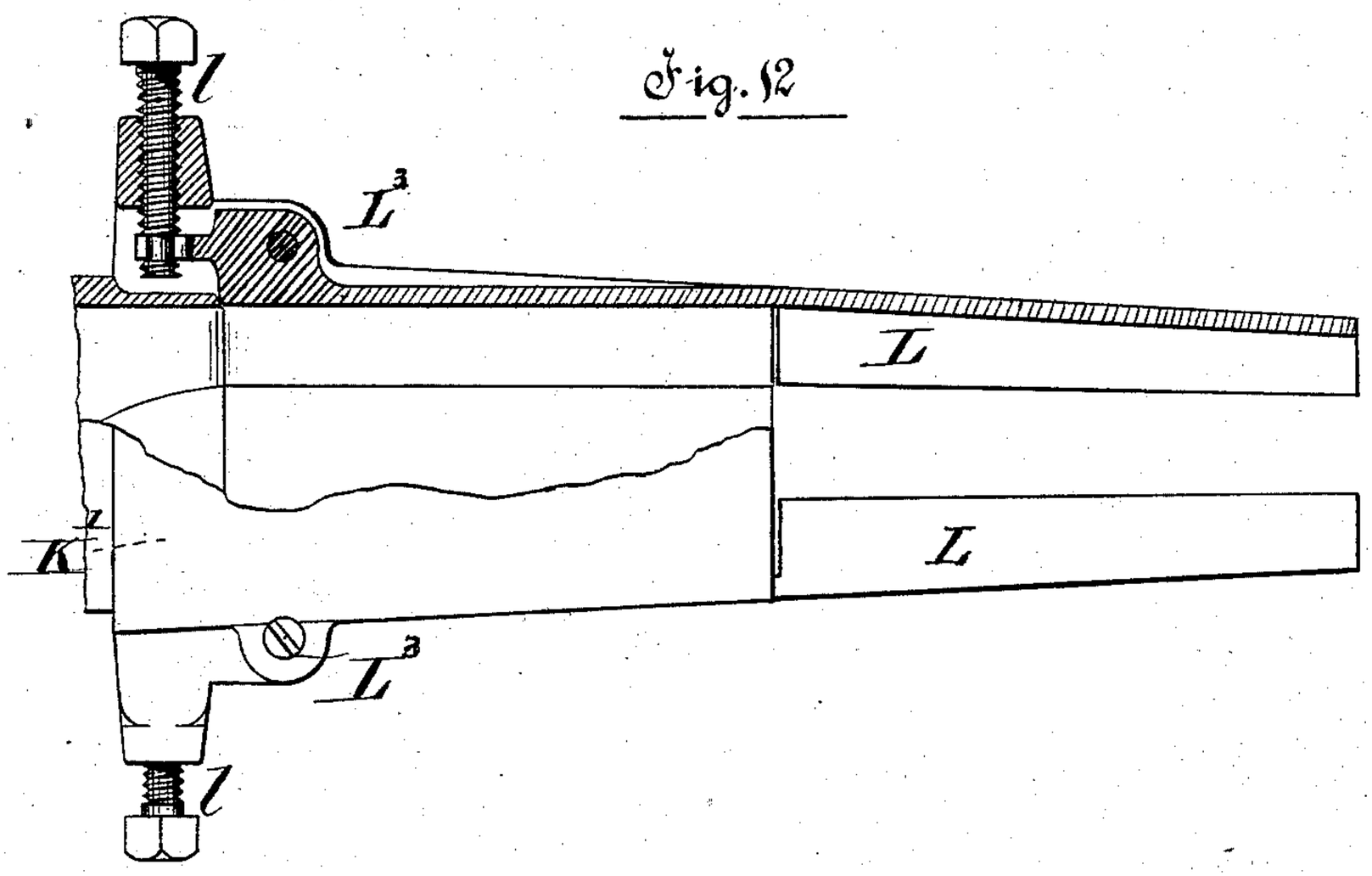
(Model.) 4 Sheets—Sheet 4.

L. M. SENÉCAL.

NAIL PLATE FEEDER.

No. 261,878. Patented Aug. 1, 1882.

Fig. 12



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Per Atty:

Chas. H. Stevens

UNITED STATES PATENT OFFICE.

LOUIS M. SENÉCAL, OF ST. HENRI, ASSIGNOR OF ONE-HALF TO JAMES DE GASPÉ STUART, OF MONTREAL, QUEBEC, CANADA.

NAIL-PLATE FEEDER.

SPECIFICATION forming part of Letters Patent No. 261,878, dated August 1, 1882.

Application filed June 23, 1881. (Model.)

To all whom it may concern:

Be it known that I, LOUIS MISAËL SENÉCAL, of the town of St. Henri, in the district of Montreal and Province of Quebec, Canada, have invented a certain new and useful Automatic Feeding Apparatus for Nail-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention, which can be affixed to any nail-machine of the ordinary construction without any necessity for rearrangement of its parts, receives motion directly from it, feeds the nail-plate to the cutting mechanism in exactly the same way as is done by the workman, the turning over being performed automatically, and the exact amount to be fed to the cutters properly gaged.

My invention is also arranged to feed hot plate when this is to be cut up into nails, and may be thus briefly described: Upon the roller or cam-shaft of a nail-machine is placed a cam giving rocking motion independently to two levers pivoted in a fork carried in a projection from the frame. To the ends of these levers are attached rods operating horizontally-placed levers pivoted on the same center under the frame, to their outer ends being secured adjustably rods ending in wire ropes, each of which is separately attached to a grooved pulley mounted rigidly on a transverse horizontal shaft. This transverse shaft, which through the mechanism above described receives a rocking motion, is carried in front of the machine in suitable bearings, so arranged that its position may be shifted at will either vertically or laterally, backward or forward. Upon this shaft are secured two pulleys, by the rotation of which a rocking motion is imparted through wire ropes to a cylinder carried in bearings resting on the shaft. This cylinder carries the nail-plate and feeds it to the machine, offering in the usual way each face of the plate alternately to the cutters. It is made in two parts, and the mechanism for rotating it so arranged that the front part—viz., the one that holds the plate—shall perform but half a turn while the rear portion does two-thirds of a revolution, the stoppage of the front part giving time for the cutters to separate the nail from the plate, the extra independent rotation of the rear part of the cylinder completing the operation of the mechanism for automatically feeding the nail-plate forward. A spring engaging with stops on the front part of the cylinder and detached therefrom by a suitable detent arranged thereon serves to secure the half-turn of the front cylinder in either direction without interfering with the revolution of the rear part, or with the action of the cam operating the nippers. The conductors or nose-pieces at the feeding end of the cylinder are arranged so as to be shifted, their position being altered by set-screws or equivalent means, and so constructed as to yield to slight inequalities of the plate. A system of levers, in connection with the supports of the cylinder, and operated by a cam, serves to tilt the cylinder sufficiently to enable the nose-pieces to clear the nail-cutting knife as the cylinder is turned over. The several devices just mentioned, and going to make up the complete mechanism, are all provided with means whereby their respective actions may be modified or their relative positions slightly varied.

For full comprehension of my invention reference must be had to the annexed drawings, in which Figure 1 is a plan view of the apparatus, Fig. 2 a side view, Fig. 3 a front view, and Fig. 4 a rear view, of the same. Fig. 5 is an enlarged plan of the nippers; Figs. 6 and 7, respectively, side and front views of tilting mechanism for cylinder; Figs. 8 and 9, views of cam; Figs. 10 and 11, details of cylinder, and Fig. 12 a detail of the nose-pieces.

Similar letters of reference indicate like parts.

A is the frame of the nail-machine, of any usual type, size, and strength, B being the cam-shaft of same, carried in suitable bearings in the frame, rotated in any usual way, and giving motion to my apparatus. Upon this shaft B is mounted the triple cam C, giving the heads D′ D′ of the pivoted levers D not only an independent reciprocating motion longitudinally, but also a simultaneous reciprocating lateral movement, these levers being pivoted in a fork, E, carried loosely on an arm, E′, projecting from the frame.

F F are levers pivoted where shown, at *f* in Fig. 1, under the frame, receiving respectively reciprocal motion from the levers D D, being connected therewith by rods F′ F′, so adjust-

ed as to accommodate themselves to any angle, preferably resting in eyes formed at the ends of the respective levers, and secured in place by springs F^2 F^2 coiled round same. To the ends of these levers F F are secured rods G G, having fastened to their ends wire or other suitable ropes or chains, G′ G′, the other ends of which are firmly attached each in the groove of a pulley, H′, mounted on a shaft, H, set transversely in front of the nail-machine.

g g are jam-nuts, or nuts and washers, on the screwed ends of G G to tighten up any slackness of the wire. This shaft H is carried in arms I, turned up, slotted, and secured to the frame by washers and screws, or in any other suitable way, so as to be adjustable vertically. In bent projections I′ I′, secured to the arms I I, work screws *i i*, pressing against the ends of the shaft and adjusting its position laterally, thus varying the size of the tread of the nail.

i′ i′ are screws for adjusting the shaft H, and by their action moving the shaft H farther from or nearer to the front of the machine, or varying the angle of the axis of the shaft to the machine.

It will of course be understood from the foregoing that the motion of the levers D D, acting through rods F′ F′, levers F F, and rods G G, connected with pulley H′, imparts to this shaft H and all mounted on it a rocking movement.

H^2 H^2 are pulleys suitably keyed on the shaft H and moving simultaneously with the pulley H′. To these pulleys H^2 H^2 are secured wire or other ropes or chains, *h h*, the other ends of which are secured to pulleys *k k*, formed on the cylinder, to be presently described, and giving to the cylinder the alternate rotation or rocking motion of the transverse shaft H. This cylinder is formed of two parts, K K′, the former smaller than and working somewhat inside the other, in the interior of which are formed receptacles for the conductors or nose-pieces L L. These are pivoted at L^3 to the sides of the cylinder, at a small distance from their rear ends, to which are connected set-screws *l l*, and by the operation of these the distance apart of the front ends or gripping portion is adjusted. These nose-pieces are made wholly or partially of spring-steel, so that the construction just described will allow any inequalities in the plate to pass through without difficulty, a yielding resistance only being presented. These nose-pieces L L bring the nail-plate to be cut down onto the bed-plate A′ of the nail-machine and hold it there during the operation. Upon the bed-plate A′ is secured a stop, L′, which bears against the side of one of these nose-pieces L when the nail is to be cut and the parts in the position shown in Fig. 1, and is cleared by them while the cylinder is being tilted, as shown in Fig. 2. This stop L′ is so placed or adjusted on the bed-plate A′ that when the nose-piece is just in contact with it the nail-plate is presented to the cutter in exactly the proper position to form the head of the nail. Should these nose-pieces, from their springy nature, be expanded by inequalities in the plate, such expansion in the side next the stop will be prevented by it, the plate be kept on that side in its proper position, and the nail, although a trifle longer, will have a perfect head. Again, since this stop presses against the holders and not against the plate, it cannot, when the plate is nearly fed through, exercise leverage upon it and press it sidewise before it reaches the cutters, which are thus enabled to cut just as well at the end as at the beginning of a piece and to use it up, excepting a very small quantity of scrap.

The cylinder K K′ is carried in bands M M, supported on either side by forks M′ M′, rigidly secured to standards M^2, carried up from sleeves on the spindle H.

To secure the rotation of the front cylinder, K′, simultaneously with K, operated directly by the wire ropes *h h*, but performing a less revolution — *i. e.*, one-half instead of two-thirds — I secure to the side of K a flat spring, N, passing through a notch on the front pulley, *k*, and having a projection on the inner face of its free end. This, when the cylinder K has performed a small portion of its revolution, falls into a notch, N′, formed in the cylinder K′, and carries this cylinder around until it has completed the full half-circle, and the nose-pieces are again in their normal position. At this point a stop, N^2, formed on K′ by the side of the notch N′, comes against a detent, N^3, secured to the band M or frame N^3, previously disengaging the spring N, which, with the cylinder K, completes the two-thirds revolution, and as the reverse turn begins the action just described is repeated. The spring N, passing on to the semicircular piece N^3, presses it in against the cylinder K′, thus keeping the stop N^2 in contact with N^3 and assuring the stoppage of the revolution of said cylinder.

The mechanism just described is shown most fully in Figs. 10 and 11, the first giving the position of the several parts when the cylinders K K′ are revolving simultaneously, and the second their position when the cylinder K′ has been stopped and K is still revolving.

The devices for tilting the cylinder-carriage M′ M′ will now be described.

O is an arm secured at one end by a universal joint to the frame, and having attached to the other adjustably, by a set-screw or in any other suitable way, a ring, O′, from which projects a pin dropping into a ring, P′, carried loosely in the forked end of a lever, P, secured, as will be described, to one of the standards M^2. This lever P is at its lower end bent, and against this works a cam, Q, mounted rigidly on the shaft H and operating twice in the course of its revolution. Between P and M^2 is interposed a curved lever, R, with a projection formed on its side and entering into a slot formed in M^2, so as to insure their simultane-

ous movement. The lever P is secured to M^2 by a bolt passing through it and the lever R, and secured outside M^2 by a nut and washer. The arm O rests in the forked end R′ of this last lever, R, and against it presses a spring, S, coiled round the arm. The lever P is by means of the arm O fixed at any position desired, but is movable and acted upon by the cam Q at its lower end. As this cam Q recedes in its revolution from its farthest point of contact with the bent lever P this lever, coming nearer to the center of the shaft H, allows the spring S to expand, and this, pressing against the forked end R′ of the lever R, imparts motion to the standard M^2 and the cylinder-carriage, and thus tilts the cylinder. The operation of this apparatus is so timed that the tilting backward of the cylinder and consequent elevation of its front end shall be greatest at the time when the nose-pieces are in a vertical position to each other, and that it will gradually move forward as these turn to bring their flat sides in contact with the bed-plate.

It will be obvious that the degree of tilting of the cylinder can be adjusted by raising or lowering the position of the pivot-point *r* of the levers P and R with the standard M^2.

Should the shaft H, by means of the screws *i′ i′*, before mentioned, be moved nearer the machine, it will be necessary to adjust the position of the ring O′ and its pin on the arm O with relation to the lever P. This regulates the normal position of the cylinder, and therefore the nose-pieces, with relation to the bed-plate of the nail-machine, and the position of the pivot *r*, as just mentioned, determines the degree of tilting. Again, by lifting the arm O out of the ring P′ and swinging it out sidewise the whole of the nail-feeding apparatus is partially detached, the nail-machine being then entirely free for access by the workman, and thus the knives may be sharpened or adjusted without detaching any part of the nail-feeding apparatus, which may be instantaneously put in gear with the nail-machine by simply restoring the pin of O′ to its position in the ring P′.

The mechanism for feeding the nail-plate is as follows: From the under side of the bands M M projects backward a longitudinal rib, T, carrying in small standards *t t*, secured thereto, a small rod, U, on the end of which is the pivot-point U′ of the nipping-levers V V′, having mounted on their outer ends the nippers W W′, lined preferably with cushions of rubber and iron packing placed vertically and alternately. The inner ends of these nipping-levers are carried in curved standards T′ T^2, the former holding the moving lever V in a notch and the latter the fixed lever V′ in an eye. In the end of the lever V is fixed a pin, *v*, which, as the cylinder K rotates, engages with a cam, X, formed thereon, simultaneously drawing forward the nipper-rod and shutting the nippers W W′. A coiled spring, *u*, on the rod U returns the nipping-levers to their normal position, the degree of its tension being adjusted by a loose ring secured on U by a set-screw, and the distance which these levers retire when released from the cam, and consequently the width of the nail to be cut, being regulated by the screw Y, working against the pivot-point U′.

Having thus described my invention, I may say that the several devices described are arranged and timed to co-operate with each other and the nail-cutting machine, and that what I claim is as follows:

1. In combination with the levers D, the triple cam operating by its rotation to give to said levers lateral motion.

2. The barrel or cylinder holding the nail-plate, formed in two parts, and rotated in different proportions of a complete revolution, as and for the purposes set forth.

3. The combination, with the cylinder K, of spring N, engaging with recess in cylinder K′, and rotating it for the desired distance, and projection N^2, acting against stop N^3 to arrest revolution of K′, all substantially as herein described.

4. The combination, with cylinder rotated alternately in opposite directions and holding the nail-plate, of nipping-levers which, by means of a projection on the end of one engaging with a cam on the rim of the cylinder, simultaneously shut the nippers and feed the nail-plate forward, all substantially as herein set forth.

5. The combination of the rod U, carried in projection from tilting frame, the nipping-levers V V′ pushing same forward, the spring *u* returning same to normal position, and the screw Y, carried independently in projection T, all constructed and operating substantially as herein set forth, and for the purposes described.

6. In a nail-plate feeder, the combination, with the cylinder carrying the nail-plate, of the nose-pieces L, pivoted near their rear ends to the said cylinder, and the set-screws *l*, which pass through the rear ends of the said nose-pieces to adjust their forward ends to nail-plates of different widths.

7. The combination, with one of the standards carrying the cylinder, of the levers R and P, operated by cam Q on shaft H, and arm O, connected adjustably with lever P, and having thereon spring S, operating against lever R, all constructed, arranged, and operating substantially as described, and for the purposes set forth.

8. The combination of the arm O, pivoted to the nail-cutting machine, lever P, and ring O′, with projection on same dropping into ring P′, carried on end of said lever, all substantially as described, and working together to put nail-plate feeder in gear for action.

LOUIS MISAËL SENÉCAL.

Witnesses:

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FRAS. HY. REYNOLDS.